CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

FINAL ORDER No. 91-081

SITE CLEANUP REQUIREMENTS FOR:

CTS CORPORATION
1911, 1921, and 1931 Plymouth Street
and 1950 Colony Street
MOUNTAIN VIEW
SANTA CLARA COUNTY

ADN Corporation
450 San Antonio Road
PALO ALTO
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board) finds that:

1. Site Location and Description CTS Printex (Printex) manufactured printed circuit boards at their former facility in Mountain View from 1970 to 1985. The facility was located on Plymouth and Colony Streets east of Sierra Vista Avenue at 1904, 1940, and 1950 Colony Street and at 1905, 1911, 1921, and 1931 Plymouth Street (See Figure 1). Printex leased their properties from ADN Corporation who owns the property. CTS Corporation, Parent Corporation for the former Printex Facility has assumed primary responsibility for the subsurface investigation and cleanup.

   The former Printex facility is located on the northwest corner of the Santa Clara Valley between the south end of the San Francisco Bay and the Santa Cruz Mountains in the County of Santa Clara. The approximate area involved in the Remedial Investigation (RI) and Feasibility Study (FS) activities is bounded by Colony Street, on the east by Permanente Creek, and on the west by Rengstorff Avenue and to the north Charleston Road. The site is located 2.5 miles south of San Francisco Bay. The terrain at the site is relatively flat except for surface drainage. The land surrounding the facility is zoned and used for light industrial/manufacturing, commercial, residential, and agricultural.

   In accordance with Provision C.2., ADN Corporation, as landowner of the property, shall be responsible for complying with this Order in the event the CTS Corporation fails to comply with this Order.

2. Site History According to the property owner, Arthur D. Nearon, prior to the construction of the buildings, the site consisted of an open field. The buildings are the original structures constructed on the site in 1970. The only industrial activity known to occur on this property was the manufacture of circuit boards.

   Printex was incorporated in 1966 and operated a printed circuit board manufacturing facility at the site since 1970. In 1981 Printex was acquired by CTS Corporation from Anglo Energy, Inc. and was renamed CTS Printex, Inc.. CTS Printex manufactured printed circuit boards at its manufacturing facility located at 1904, 1940, and 1950 Colony Street and at 1905, 1911, 1921, and 1931 Plymouth Street from late 1981 to early 1985. The buildings located at 1904, 1940, and 1950 Colony Street were primarily used for offices, data processing, storage, shipping and dry processes. Hazardous materials were stored at two major locations: the warehouse at 1905 Plymouth street and the flammable material storage area located behind the warehouse.

Printed circuit board manufacturing processes which generated waste were primarily located within the buildings at 1911, 1921, and 1931 Plymouth Street. The building at 1911 Plymouth Street contained the wet floor.

Subsurface investigations were initiated by Printex in January 1985 prior to moving their operation to Fremont. Metals and volatile organic compounds (VOCs)) were detected in soil and groundwater during these investigations. Two sources of these chemicals are the wet floor located at 1911 Plymouth Street and the neutralization sump located adjacent to this building. Metals detected in soils and groundwater were copper and lead, while VOCs detected were trichloroethene (TCE), l,l,l-trichloroethane (TCA), l,l-dichloroethene (DCE), cis & trans-1,2-dichloroethene (c/t-DCE), and l,l-dichloroethane (DCA).

3. National Priority List "Superfund" Printex was proposed to be placed on the National Priority List (NPL) on June 24, 1988. Printex was placed on the final NPL list on February 1, 1990.

4. Administrative Orders and Permits The following administrative orders and permits have been adopted for Printex:

- o Interim status as a RCRA Storage Facility with the EPA ID No. CAD0092128838
- o City of Mountain View Permit to Discharge waste waters to the City sanitary sewer
- o Various Bay Area Air Quality Management District (BAAQMD) operating permits
- o March 1987 - Cleanup and Abatement Order No. 87-05 to CTS Printex for facilities located at 1911, 1921, and 1931 Plymouth Street
- o April 1989 - Order No. 89-063, Site Cleanup Requirements
- o November 1990-Cleanup and Abatement Order 90-149

5. Potentially Responsible Party Results of the Potentially Responsible Party (PRP) search pursuant to the Health and Safety Code Section 25356.1 (c) and (d) are that CTS Printex and ADN Corporation are the only identified responsible parties associated with the release of pollutants to the subsurface at this location. CTS has accepted responsibility for the site cleanup. Carl Sox, dba CS Services, may also have contributed pollutants to the plume originating at the Printex site. Therefore CS Services is a PRP defined in section 25356.1.

6. Community Involvement An aggressive Community Relations program has been ongoing for all Santa Clara Valley Superfund sites, including Printex. The Board published a notice in the March 1991 issue of "The View", the city of Mountain View community newspaper, announcing the proposed final Remedial Action Plan and opportunity for public comment at the Board Hearing of March 20, 1991 in Oakland, and announcing the opportunity for public comment at an evening community meeting to be held at the Crittenden Middle School in the City of Mountain View on March 21, 1991. A presentation of the proposed final cleanup plan was made at the March 20, 1991 Board Hearing and the March 21, 1991 evening community meeting. The 30 day comment period was from March 20, 1991 to April 19, 1991.

Fact Sheets were mailed to interested residents, local government officials, and media representatives. Fact Sheet 1, mailed in October, 1989, summarized the pollution problem, the results of investigations to date, and the interim remedial actions. Fact Sheet 2, mailed in March, 1991, described the cleanup alternatives evaluated, explained the proposed final Remedial Action Plan (RAP), announced opportunities for public comment at the Board Hearing of March 20, 1991 in Oakland and the Public Meeting of March 21, 1991 in Mountain View and described the availability of further information at the Information Repository at the City of Mountain View Public Library. The Responsiveness Summary summarizes responses to significant comments received during the public comment period. Fact Sheet 3, expected to be mailed in May, 1991, will explain the final adopted cleanup plan contained in this Order.

7. Summary of Site Characteristics

History of Site Investigation A summary of actions initiated to assess and mitigate chemical occurrence in the soil and the groundwater at the Printex former facility is presented in the RI/FS, section 3.5 titled Remedial Investigation History. A chronological summary is provided that begins in December, 1984 with a meeting with State and City of Mountain View officials regarding the planned voluntary site assessment in anticipation of closing the facility. The most recent activities have been associated with the Board's Cleanup and Abatement Order 90-149. This involves some recent field activities to determine the source associated with contamination in well 34W.

8. Source Investigation The potential sources investigated were as follows: the wet floor within the building at 1911/1921/1931 Plymouth Street, the wastewater sump located immediately behind the building at 1911/1921/1931 Plymouth Street, the industrial sewer line connecting the wastewater sump to the City of Mountain View sanitary sewer, the drummed chemical staging area located immediately behind the 1911/1921/1931 Plymouth Street building, the warehouse located in the eastern half of the 1905 Plymouth Street building and the flammable materials storage area located behind the 1905 Plymouth Street building. Additional information on the sources identified above can be found in the RI/FS in section 3.6 Source Identification & Control and the locations can be found in Figure 3. Soil borings were drilled and sampled and analyzed for VOCs and metals to determine the actual source areas. It was determined that the two source areas are the wet floor and the sump area. A total of 59 soil borings have been drilled to determine the magnitude and extent of soil contamination. Up to 22,000 ppm copper, 2,500 ppm lead, and 0.380 ppm TCE were detected in soil samples beneath the wet floor.

9. Groundwater Investigation CTS has installed 38 monitoring and extraction wells to depths of up to 75 feet. Volatile organic compounds have not been detected in the deepest monitoring wells at concentrations above 1.0 ppb.

In January 1988, Board staff and the discharger agreed that the plume was adequately defined provided chemical concentrations in wells 33W, 34W, 35W, 36W, or 37W did not increase. However, considering that VOCs have been detected in wells 33W and 34W at concentrations greater than DHS drinking water action levels and that final cleanup orders adopted by the Board for other sites have required cleanup to at least DHS drinking water action levels, another well (38W) was installed south of well 33W and west of well 34W. Well 38W contains a mean concentration of 50 ppb TCE. Two additional sites are being investigated in the area of well 38W. Investigations by CTS in early 1991 appear to bound the edge of the plume in the area of wells 34W and 38W. Therefore there is currently enough information known about the plume to select the type of final remediation. However additional monitoring well(s) will be needed for long term plume definition and remediation progress.

10. Regional Hydrogeology The Santa Clara Valley which extends southeast from San Francisco Bay and is bounded by the Diablo Range on the northeast, and by the Santa Cruz and Gavilan Ranges on the southwest.

The Santa Clara Valley is a large structural depression in the Central Coastal Range of California. The Valley is filled with alluvial and fluvial deposits from the adjacent mountain ranges. These deposits are up to 1,500 feet in thickness. At the base of the adjacent mountains, gently sloping alluvial fans of the basin tributaries laterally merge to form an alluvial apron extending into the interior of the basin.

The Santa Clara Valley groundwater basin is divided into two broad areas: 1) the forebay, and 2) the confined area, where the former Printex facility is located. The forebay occurs

along the elevated edges of the basin where the basin receives its principal recharge. The confined area is located in the flatter interior portion of the basin and is stratified or divided in individual beds separated by significant aquitards. The confined area is divided into the upper and lower aquifer zones. The division is formed by an extensive regional aquitard that occurs at depths ranging from about 100 feet near the confined area's southern boundary to about 150 to 250 feet in the center of the confined area and beneath San Francisco Bay. Thickness of this regional aquitard varies from about 20 feet to over 100 feet.

Several aquifer systems occur in the upper aquifer zone separated by aquitards which may be leaky or very tight. Groundwater pollution at this site is confined to the upper aquifer zone. The lower aquifer zone occurs beneath the practically impermeable regional aquitard. The regional aquitard occurs at approximately 100 to 150 feet below grade in the area of the Printex site. Numerous individual aquifers occur within this predominantly aquitard zone and all groundwater in this zone occurs confined.

Municipal water supply wells are generally perforated in the lower aquifer zone.

11. Site Hydrogeology The two major water-yielding zones beneath the site consist of an upper zone about 75 feet thick and a deep aquifer separated by an aquitard approximately 50 feet thick. The deep aquifer begins at about 150 feet below ground surface. Three shallow aquifer zones have been identified beneath the site. These zones are designated as the A, B, and intermediate aquifer zones. The A, B, and intermediate aquifer zones are subdivisions of the upper aquifer zone. The shallowest, or A aquifer zone (A zone), has its upper boundary at about 10 feet below ground surface (BGS), and lower boundary about 20 feet BGS. The B aquifer zone (B zone) lies between about 30 and 40 feet BGS. It is suspected that hydraulic separation between the two zones is imperfect owing to the discontinuous nature of sediment types. The deeper intermediate aquifer zone lies between 60 to 75 feet BGS. These zones are not distinct in all of the bore holes and correlation of individual permeable zones is imperfect. Depth to groundwater is approximately 9 feet. Shallow groundwater flow in the A and B zone, beneath the site, is generally to the north. This flow regime is consistent with the northerly regional flow towards the San Francisco Bay.

12. Other Source Investigation Investigation by Board staff revealed two additional potential sources of chemicals near the northwest boundary of the Printex plume. One site, Castro Paint, did an acceptable investigation dated January 9, 1990 which showed it is probably not a source of TCE. Further investigation of Castro Paint may be warranted for other chemicals. The other site, CS Services, has used TCE as part of its operations and as a weed killer.

CS Services (CS) business consists of engine conversion, 4 wheel drive work, and some boat repair. CS is located near the northwest boundary of the Printex plume. During a staff interview dated January 9, 1990 CS owner, Carl Sox stated TCE was used as part of its operations and as a weed killer.

On April 30, 1990 Board staff conducted a preliminary investigation of the CS site. Three soil borings were done in the area where staff was told that TCE was used for weed control. Limited sampling and analysis of soil did not indicate contamination with TCE, but the scope of the study was too limited to provide conclusive evidence that CS Services does not represent a source of TCE.

Further investigations may be needed to determine whether CS is a source of chemical contamination of groundwater. If CS is determined to be a source, the extent of chemical migration from the site also needs to be determined.

As a result of the CAO 90-149 CTS conducted an investigation to determine the contamination in well 34W. The results of this investigation were that there is a contamination source possibly up gradient of well 34W but data is nonconclusive on whether it affects the Printex plume.

13. Summary of Site Risk The Baseline Public Health Evaluation (BPHE) examined the collective geographic, physical, chemical, biological, and ecological factors at the site to describe the extent of the potential or actual exposure and associated risk to human and nonhuman receptors. The BPHE process was used to evaluate and interpret data obtained from the RI and to develop FS objectives. Volatile organic chemicals associated with the former Printex facility have been detected in subsurface soil and groundwater.

Chemicals of Concern The final lists of chemicals of concern in soil and groundwater are presented in Table 1. Currently, chemicals routinely detected in groundwater samples are limited to the following: Benzene, Chloroform, TCE, 1,1 DCA, 1,1,1 TCA, c/t-1,2 DCE, and 1,1 DCE.

No metals concentrations in the soil produce a current adverse effect on human health or the environment. Copper and lead detected in groundwater samples were below the EPA drinking water standards, and nickel was below the California DHS applied action level. Copper, lead, and nickel are not considered to represent an impact to groundwater quality or to justify further consideration.

The only detected chemical of concern in air potentially arising from soil or diffusing through soil from groundwater was toluene, although toluene has not been detected in the groundwater.

Toxicity Assessment of Contaminants of Concern Eight of the chemicals of concern are classified as carcinogens, and three others are classified as noncarcinogens. The acceptable risk level ranges from 10^{-6} to 10^{-4} excess cancers in the exposed population.

The EPA categories for carcinogenic classification applied to the chemicals of concern are: A category carcinogen (human carcinogen with sufficient evidence in human epidemiological studies), B2 category carcinogens (probable human carcinogens, with inadequate human evidence and sufficient evidence from animal experiments), and C category carcinogen (possible human carcinogen, limited evidence of carcinogenicity in animals with inadequate human data).
Of the chemicals of concern, one is an A category carcinogen (benzene), six are B2 category carcinogens (chloroform, 1,1-DCA, 1,2-DCA, methylene chloride, tetrachloroethene, TCE). A seventh, DCE, is a C category carcinogen and has reported reproductive, teratogenic, and mutagenic effects, as do two of the noncarcinogens, toluene and TCA. The noncarcinogen tDCE is relatively nontoxic, with minimal mutagenic effects reported for in vitro systems.

14. Risk Characterization Potential types of receptors in the site vicinity were identified by reviewing census statistics for the surrounding community. The site conditions were also evaluated for non-human receptors. Human receptors were categorized in the context of possible onsite exposure to adult facility or construction workers not connected with remediation activities (occupational exposure) and offsite residents (adults and children) living in the vicinity of the site.

In the site area, there are presently seven usable registered wells for agricultural or nonpotable uses. These wells are designated 16B2, 9N14, 9P17, 9P5, 9P12, 9P21, and 9P13. None of the usable registered wells are currently used for domestic household

purposes. All residents receive water from the City of Mountain View public water distribution system.

Non-human receptors include the aquatic biota of the estuarine habitat, as well as non-human inhabitants of nearby parks and residential areas. Studies of the area have concluded that acute and chronic toxicity values for aquatic organisms are greater than current or predicted concentrations of volatile organic compounds in Permanente Creek and the southern portion of the San Francisco Bay.

Acute and chronic toxicity values for the chemicals of concern indicate that concentrations at the former Printex site would not pose a hazard to non-human mammalian species. Possible exposure pathways involving food-chain transfer were considered insignificant.

15. Risk Characterization for each Pathway Without Remediation

Current Noncarcinogenic Effects No current potentially significant and complete receptor/exposure pathways exist which might result in unacceptable (i.e. HI greater than one) noncarcinogenic effects from the chemicals of concern at the detected concentrations. The highest concentration of toluene detected in air (3.9 ppbv; 1.4×10^{-2} $\mu g/m^3$) has a hazard index (HI) less than one.

Current Carcinogenic Risks No current potentially significant and complete receptor/exposure pathways exist which might result in carcinogenic risk from the chemicals of concern at the currently detected concentrations.

Current Environmental Effects Site specific exposure levels and estimated environmental concentrations were compared to ecotoxicity data, to mammalian toxicity data, to existing environmental concern levels, and to regulatory guidelines and standards. No adverse environmental effects are expected from the chemicals of concern at the currently detected concentrations.

Future Noncarcinogenic Effects A future scenario assuming disturbance of subsurface soil in the vicinity of the buildings at 1911/1921/1931 Plymouth Street was evaluated. The total noncarcinogenic effects for all chemicals of concern via all complete pathways for soil was an HI less than 1.0.

Future noncarcinogenic effects based on possible exposure to receptors using groundwater as a domestic water supply were evaluated. Results for noncarcinogenic effects were an HI less than 1.0 under the most plausible case scenario.

Future Carcinogenic Risks A future scenario assuming disturbance of subsurface soil in the vicinity of the buildings at 1911/1921/1931 Plymouth Street was evaluated. Potential risk was based on possible exposure of onsite workers and offsite residents (adults and children) to soil via ingestion, dermal contact, and inhalation of soil vapor. The future potential carcinogenic risk from all chemicals of concern via all complete pathways was less than 1×10^{-6}.

Future carcinogenic risks based on possible exposure to onsite and offsite receptors using groundwater as a domestic water supply were evaluated. Carcinogenic risk calculated for ingestion and other exposure to groundwater by adult workers, offsite adult residents, and offsite child residents, respectively, at the former Printex facility were from 1.28×10^{-4} to 4.70×10^{-3}.

Future Environmental Effects Site specific exposure levels and estimated environmental concentrations were compared to ecotoxicity data, to existing environmental concern

levels, and to regulatory guidelines and standards. No future adverse environmental effects are expected from the chemicals of concern at the detected concentrations.

17. Required Remedial Actions to Meet Risk Management Objectives

Soil

Future risks assumed disturbance of subsurface soils in the vicinity of 1911/1921/1931 Plymouth Street. The future potential noncarcinogenic and carcinogenic effects were quantified at less than 1.0 and less than 1 $x10^{-6}$, respectively. Therefore, it is unnecessary to develop remedial action alternatives for soil.

Groundwater

The chemicals of concern have been detected in the shallow water bearing zones (10 to 20 foot and 30 to 40 foot zones). No current exposure pathway for noncarcinogenic or carcinogenic chemicals exists for shallow groundwater and no adverse environmental effects are expected from the chemicals of concern at the currently detected concentrations.

Future risks based on possible exposure by onsite and offsite receptors using groundwater as a domestic water supply source exceeded acceptable risk. The noncarcinogenic risk for offsite use was less than 1.0, except that under the most conservative assumptions the risk to children was a cumulative effect of 1.6. The carcinogenic risks for adult workers, offsite adult residents, and offsite child residents exceeded the maximum risk level of 1 x 10^{-4}; therefore, remedial action objectives apply to the shallow groundwater.

The remedial action objective for groundwater is to ensure that the plume is monitored, and that ingestion, absorption through the skin, and inhalation of contaminated groundwater is prevented.

Air

The BPHE did not identify chemicals of concern in the air, with the exception of those chemicals emitted to the air during soil excavation. Therefore, no remedial action objectives have been generated for air emissions.

18. Remedial Investigation / Feasibility Study (RI/FS). The discharger submitted a draft RI/FS on November 30, 1989. This report was reviewed and comments have been incorporated in a Final RI/FS dated March 15, 1991. The technical information contained in the RI/FS is consistent with the Health and Safety Code requirements for a final remedial action plan and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) requirements for a RI/FS. Regional Board staff have determined that the technical information contained in the Feasibility Study is acceptable for developing a final cleanup plan for the site.

19. Cleanup Alternatives. In a "Proposed Plan" (Remedial Action Plan) the discharger evaluated cleanup alternatives for soil which included no action. Cleanup alternatives evaluated for groundwater were no action, institutional actions, containment, in situ treatment, and extraction/treatment/discharge.

IDENTIFICATION OF ALTERNATIVES

Final screening of process options in the RI/FS resulted in the following remedial alternatives.

Soil

The no action alternative for soil assumes that unrestricted access to the soil containing residual contaminants would be allowed. The potential for ingestion, inhalation of particulates, or dermal contact exists only if the area is excavated. Also, when the site closure was approved by DHS pursuant to Resource Conservation and Recovery Act (RCRA), it was determined that contaminants remaining in the soil do not pose any significant risks.

Groundwater

Alternative 1 - No Action.

The no action alternative involves a cessation of all current remedial activities at the former Printex facility. The existing extraction systems would be capped and electrical supply would be disconnected.

Alternative 2 - Institutional Actions

This alternative involves restricting well permits for the installation of wells with a sanitary seal less than 100 feet, and stopping current groundwater extraction activities and only monitoring selected wells in the area to track affected groundwater movement.

Alternative 3 - Extraction/Treatment/Discharge

This alternative's objective is to reduce existing and future risks to human health and to the environment by preventing migration of chemicals in groundwater. The quantity of water treated considered for the alternative is approximately 48 gallons per minute and is based on the performance data from the existing extraction system.

In this alternative, groundwater is extracted and sent untreated to the POTW where it is treated, and ultimately discharged by the POTW. The extraction element of the alternative is assumed to be the existing system. The alternative does not consider treatment prior to discharge to the POTW.

20. Summary of Evaluation Criteria This section summarizes the nine evaluation criteria developed by EPA and used to compare the alternatives in the RI/FS. The alternatives were evaluated in detail with respect to the nine criteria in the RI/FS report. Each alternative was also evaluated with respect to the six state law criteria set forth in Section 25356.1 of the California Health and Safety Code. A comparative analysis was completed in the RI/FS.

Overall protection of human health and the environment This criterion addresses whether a remedy provides adequate protection of human health and the environment.

Compliance with applicable or relevant and appropriate requirements (ARARs) This criterion addresses whether a remedy will meet all of the ARARs or other Federal and State environmental laws ARARs for the site are defined in detail in the RI/FS.

Long-term effectiveness and permanence This criterion refers to expected residual risk and residual chemical concentrations after cleanup goals have been met and the ability of a remedy to maintain reliable protection of human health and the environment over time.

Reduction of toxicity, mobility or volume This criterion refers to the anticipated performance of the treatment technologies a remedy may employ.

Short-term effectiveness This criterion addresses the period of time needed to achieve cleanup and any adverse impacts on human health and the environment that may be posed during the construction and implementation period, until cleanup goals are achieved.

Implementability This criterion refers to the technical and administrative feasibility of a remedy.

Cost This criterion includes estimated capital and operation and maintenance, usually presented in a 30 year present worth format.

Support Agency Acceptance This criterion addresses EPA's acceptance of the selected remedy and any other EPA comments.

Community Acceptance This criterion summarizes the public's general response to the alternatives.

21. Remedial Actions. **Current Activities: Extraction/Treatment/Discharge** Seven extraction wells have been installed and are operational. The extracted groundwater is discharged to the sanitary sewer. The discharger is cycling operation of some extraction wells located in areas of high chemical concentration to allow flushing of the soils near source areas. The discharger is also alternating use of some of the extraction wells to avoid creation of a "stagnation zone" that was predicted by computer modelling of simultaneous operation of all extraction wells. The total flow rate from all the wells is less than 60 gpm. The system appears effective at containing and cleaning up the plume.

Remedial actions for soil were the excavation of approximately 250 cubic yards beneath the wet floor and excavation of the neutralization sump and approximately 40 cubic yards of surrounding soil. Soil remediation was done pursuant to a RCRA closure plan overseen and approved by the California Department of health Services.

22. Final Cleanup Plan. Based primarily on information contained in the discharger's Feasibility Study, this order provides for a final cleanup plan that includes:

a. **Soil -**

The no action alternative is the recommended remedial alternative for soil. No action is recommended because contaminated soil has been removed so that concentrations of VOC's are less than 1 ppm. The soil at the site is not a public health or environmental risk.

b. **Groundwater -**

Continued groundwater extraction by seven extraction wells from aquifers both on and off site will continue until drinking water quality is achieved. Extracted groundwater will be discharged under permit to the City of Mountain View wastewater treatment plant. This alternative provides for protection of human health and the environment, reduces contaminant mobility and volume, and utilizes existing facilities.

Achieving drinking water quality is an ARAR for this site. If drinking water quality cannot be achieved, the discharger must demonstrate to the satisfaction of the Board that the conditions for waiving an ARAR are met (i.e., that meeting the ARAR is technically impractical from an engineering perspective) and that the alternative proposed will be protective of human health and the environment. The Order will

then need to be modified by the Board and approved by the EPA's Administrator to allow a less stringent on-site groundwater cleanup level.

c. **A deed restriction** - The discharger shall be required to file a deed restriction prohibiting use of on-site groundwater for drinking water until final cleanup standards are achieved.

d. **Long-term monitoring** - Long term monitoring will be required after cleanup levels are achieved. The duration and complexity on the monitoring will be determined at that time.

23. Summary of Evaluation Criteria for the Alternatives

BASIS FOR REJECTION

Alternative 1: No Action for Groundwater

The BPHE determined future risk is unacceptable if the groundwater were used. Concentrations of the chemicals of concern have been decreasing since 1986 because of applied remedial activities. The no action alternative would leave the degradation of the contaminants of concern unmonitored.

Alternative 2: Institutional Action

This alternative is not applicable at the former Printex facility because future risks were determined by the BPHE to be unacceptable.

Alternative 3: Extraction/Treatment/Discharge

BASIS FOR ACCEPTANCE

Overall Protection of Human Health and the Environment

Constituents in groundwater are contained within a defined area and contaminated groundwater is released, under permit, to an off site treatment plant and is properly treated. Discharge from the treatment plant occurs under permit. Extraction, treatment (POTW), and disposal provides for the future protection of human health and the environment.

Compliance with ARARs The cleanup goal for aquifer cleanup is the DHS drinking water action level or Maximum Contaminant Level (MCL), whichever is more stringent. The goal of this remedial action is to restore groundwater to its beneficial uses.

Long Term Effectiveness

No significant risk to human health or the environment would result from continued operation of existing groundwater extraction, treatment, and discharge facilities. The estimated time to reach MCL goals is from 5 to 15 years.

Reduction of Toxicity, Mobility, or Volume Through Treatment

Continued operation of groundwater extraction, treatment, and discharge facilities at the site will decrease the volume of the chemicals of concern in the groundwater and the toxicity of the groundwater.

Short Term Effectiveness

Short term operation of the groundwater extraction wells will contain the contamination in a defined area and result in decreased concentrations of the chemicals of concern. Evaluation of the effectiveness of extraction, treatment, and discharge will occur at the end of each year in accordance with the agency requirements.

Implementability

The groundwater extraction, treatment, and discharge alternative has already been implemented at the former Printex facility. The estimated time to reach MCL goals is from 5 to 15 years.

Cost

Costs associated with groundwater extraction facilities have already been incurred by CTS Corporation in implementing current remedial actions at the site. Capital present value costs for the alternative are $398,000 to $852,000 which includes operation & maintenance.

Support Agency Acceptance

Groundwater extraction, treatment, and discharge will likely be acceptable to all involved agencies.

Community Acceptance

Community response to groundwater extraction, treatment, and discharge were considered in choosing the proposed alternative. No known opposition exists.

24. Cleanup Standards The groundwater cleanup standards for the site are Environmental Protection Agency MCLs (proposed or adopted), California Department of Health Services MCLs (proposed or adopted), or DHS Recommended Drinking Water Action Levels. Applicable MCL Goals (i.e., greater than zero) are met by the cleanup standards required by this Order.

Groundwater extraction will continue until drinking water quality is achieved, if feasible. If these standards are determined to be infeasible, groundwater extraction shall continue as long as significant quantities of chemicals are being removed through groundwater extraction. Achieving drinking water quality is an ARAR for this site. If drinking water quality cannot be achieved, CTS must demonstrate to the satisfaction of the Regional Board that the conditions for waiving an ARAR are met (e.g., that meeting the ARAR is technically impractical from an engineering perspective) and that the alternative proposed will be protective of human health and the environment. The Order will then need to be modified by the Regional Board and approved by EPA to allow a less stringent groundwater cleanup level.

25. Evaluation of Final Plan. In accordance with the Health and Safety Code Section 25356.1, Section 121 of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the final RAP submitted in the form of a "Proposed Plan" and as approved by the adoption of this Order, satisfies the requirements of the California Water Code Section 13304 and is protective of human health and the environment; attains ARARs; utilizes permanent solutions and alternative treatment technologies and resource recovery technologies to the maximum extent possible for short term effectiveness; is implementable; is cost effective; is acceptable based on State regulations, policies, and

guidance; reduces toxicity, mobility, and volume of pollutants; and addresses public concerns.

26. State Board Resolution 68-16. On October 28, 1968, the State Board adopted Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California". This policy calls for maintaining the existing high quality of State waters unless it is demonstrated that any change would be consistent with the maximum public benefit and not unreasonably affect beneficial uses. This is based on a Legislative finding, contained in Section 13000, California Water Code, which states in part that it is State policy that "waters of the State shall be regulated to attain the highest water quality which is reasonable." The original discharge of wastes to the groundwater at this site was in violation of this policy. For purposes of establishing cleanup objectives, the shallow groundwater at the site is designated a potential source of drinking water, and protective levels shall be those levels which have been established as protective for drinking water. At this time it appears that cleanup of groundwater to below the MCL for TCE may be technically impractical due to the difficulties in restoring aquifers to concentrations below 5 ppb. For this reason, the MCL is acceptable to meet the intent of Resolution 68-16.

27. Future Changes to Cleanup Standards If new information indicates cleanup standards cannot be attained or can be surpassed, the Board and EPA will decide if further final cleanup actions, beyond those completed, shall be implemented at this Site. If changes in health criteria, administrative requirements, site conditions, or remediation efficiency occur, the discharger will submit an evaluation of the effects of these changes on cleanup standards as defined in Specification B.4.

The Regional Board recognizes that the discharger has already performed extensive investigative and remedial work and that the discharger is being ordered hereby to perform additional remedial tasks. It is in the public interest to have the discharger undertake such remedial actions promptly and without prolonged litigation or the expenditure of public funds. The Regional Board recognizes that an important element in encouraging the discharger to invest substantial resources in undertaking such remedial actions is to provide the discharger with reasonable assurances that the remedial actions called for in this Order will be the final remedial actions required to be undertaken by the discharger. On the other hand, the Regional Board also recognizes its responsibility to protect water quality, public health, and the environment and that future developments could indicate that some additional remedial actions may be necessary.

The Regional Board has considered and balanced these important considerations, and has determined that the remedial actions ordered herein represent the Regional Board's best, current judgement of the remedial actions to be required of the discharger. The Regional Board will not require the discharger to undertake additional remedial actions with respect to the matters previously described herein unless: (1) conditions on the site, previously unknown to the Regional Board, are discovered after adoption of this Order, or (2) new information is received by the Regional Board, in whole or in part after the date of this Order, and these previously unknown conditions or this new information indicates that the remedial actions required in this Order may not be protective of public health and the environment. The Regional Board will also consider technical practicality, cost effectiveness, State Board Resolution No. 68-16 and other factors evaluated by the Regional Board in issuing this Order in determining whether such additional remedial actions are appropriate and necessary.

28. Data Validation Development of the Board's final Remedial Action Plan was based on the Board's evaluation of eight years of water and soil quality data. Random samples have been collected and analyzed by the Board to confirm the validity of data generated by the

dischargers. Data has been validated using EPA validation guidance. The Board finds that there is sufficient acceptable data to make cleanup decisions.

29. Lead Agency Pursuant to the South Bay Multi-Site Cooperative Agreement and the South Bay Ground Water Contamination Enforcement Agreement, entered into on May 2, 1985 (as subsequently amended) by the Regional Board, EPA and DHS, the Regional Board has been acting as the lead agency. EPA is expected to agree with the selected remedy and issue a Record of Decision following adoption by the Regional Board of the remedial action plan. The Regional Board will continue to regulate the dischargers' remediation and administer enforcement actions in accordance with CERCLA as amended by the Superfund Amendments and Reauthorization Act (SARA), the California Water Code, Health and Safety Code, and regulations adopted thereunder.

30. Administrative Record The Administrative Record has been prepared in accordance with EPA Guidance, has been made available for public and PRP review, and provides the backup documentation for the recommendations of staff and decisions by the Board.

31. CTS Printex and ADN Corporation are responsible parties under the federal Superfund (CERCLA/SARA).

32. CTS Printex (hereinafter referred to as a discharger) is a discharger because of the releases of chemicals that have resulted from its waste handling facilities. ADN Corporation (hereinafter referred to as a discharger) is a discharger because it is the current owner of the property where these releases have occurred.

33. The selected remedial action plan for the Printex Site was chosen in accordance with the Health and Safety Code Section 25356.1, CERCLA, as amended by SARA, the NCP, and pursuant to the Multi-Site Cooperative Agreement. This decision is based on the administrative record for the site.

34. The final remediation action plan is conceptual and provides a basis for remedial design.

35. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on December 17, 1986. The Basin Plan contains water quality objectives and beneficial uses for South San Francisco Bay and contiguous surface and ground waters.

36. The existing and potential beneficial uses of the groundwater underlying and adjacent to the facility include:

    a. Industrial process water supply
    b. Industrial service water supply
    c. Municipal and Domestic water supply
    d. Agricultural water supply

37. The discharger has caused or permitted, and threatens to cause or permit, waste to be discharged or deposited where it is or probably will be discharged to waters of the State and creates or threatens to create a condition of pollution or nuisance.

38. Onsite and offsite containment and cleanup measures need to be implemented and/or continued to alleviate the threat to the environment posed by the continued migration of pollutants and to provide a substantive technical basis for designing and evaluating the effectiveness of final cleanup alternatives.

39. This action is an order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of the CEQA pursuant to Section 15321 of the Resources Agency Guidelines.

40. The Board has notified the discharger and interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharge and has provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.

41. Resolution 88-160, adopted by the Regional Board, strongly encourages, the maximum feasible reuse of extracted groundwater from groundwater pollution remediations either by the discharger or other public or private water users. Consideration and implementation of Resolution 88-160 by the discharger is required by Provision C.2.a.

42. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the discharger shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect the beneficial uses of the waters of the State is prohibited.

2. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.

3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of pollutants are prohibited.

B. SPECIFICATIONS

1. The storage, handling, treatment or disposal of soil or groundwater containing pollutants shall not create a nuisance as defined in Section 13050(m) of the California Water Code.

2. The dischargers shall conduct monitoring activities as determined by the Executive Officer to define the current local hydrogeologic conditions, and the lateral and vertical extent of soil and groundwater pollution. Should monitoring results show evidence of plume migration, additional characterization of the pollutant plume may be required.

3. All Printex wells shall be used to determine if cleanup standards have been met.

4. Final cleanup standards for all onsite and off-site wells shall not be greater than the levels as provided in Finding 22. The numerical final cleanup standards, therefore, shall not exceed the concentrations in any well as set forth in Table 1.

5. All groundwater extraction systems shall be maintained and kept operational.

C. PROVISIONS

1. The discharger shall submit to the Board acceptable monitoring program reports containing results of work performed according to a program prescribed by the Executive Officer.

2. The discharger shall comply with the Prohibitions and Specifications above immediately except as modified by the time schedule and tasks listed below. Within sixty (60) days of the Executive Officer's determination and actual notice to ADN Corporation that CTS Corporation has failed to comply with this Order, ADN Corporation, as landowner of the property, shall be responsible for complying with the Order.

a. COMPLETION DATE: JANUARY 6, 1992

TASK 1: GROUNDWATER REUSE AND RECLAMATION: Submit a technical report acceptable to the Executive Officer containing the groundwater reuse and reclamation plan for the treated groundwater. The report shall include documentation of efforts to reuse the water, efforts to secure users for the water, and reasons why potential users would not accept the water and discuss the technical feasibility and cost-effectiveness of other water reuse options.

b. COMPLETION DATE: DECEMBER 1, 1991

TASK 2: EVALUATION OF REMEDIAL MEASURES: Submit a technical report acceptable to the Executive Officer which contains results of the remedial measures and evaluates the effectiveness of the hydraulic containment system and other interim remedial measures. Such an evaluation shall include, but need not be limited to, an estimation of the flow capture zones of the extraction wells, establishment of the cones of depression by field measurements, and presentation of chemical monitoring data. The report shall also evaluate the effects of operation of existing extraction wells on groundwater levels and effectiveness of the well cycling program to avoid creating stagnation zones or if monitoring well(s) should be added or deleted.

c. COMPLETION DATE: May 31, 1996

TASK 3: FIVE-YEAR STATUS REPORT AND EFFECTIVENESS EVALUATION. Submit a technical report acceptable to the Executive Officer containing the results of any additional investigation; an evaluation of the effectiveness of installed final cleanup measures and cleanup costs; additional recommended measures to achieve final cleanup objectives and standards, if necessary; a comparison of previous expected costs with the costs incurred and projected costs necessary to achieve cleanup objectives and standards; and the tasks and time schedule necessary to implement any additional final cleanup measures. This report shall also describe the reuse of extracted groundwater and evaluate and document the cleanup of contaminated soil and groundwater. If safe drinking water levels have not been achieved onsite and are not expected to be achieved through continued groundwater extraction and/or soil remediation, this report shall also contain an evaluation addressing whether it is technically feasible to achieve drinking-water quality, and if so, a proposal for procedures to do so.

d. COMPLETION DATE: 90 days after request made by the Executive Officer

TASK 4: EVALUATION OF NEW HEALTH CRITERIA. Submit a technical report acceptable to the Executive Officer which contains an evaluation of how the final plan and cleanup standards would be affected, if the concentrations as listed in Specification B.4. change as a result of

promulgation of drinking water standards, maximum contaminant levels or action levels or other health based criteria.

e. COMPLETION DATE: 90 days after request made by the Executive Officer

TASK 5: EVALUATION OF NEW TECHNICAL INFORMATION. Submit a technical report acceptable to the Executive Officer which contains an evaluation of new technical and economic information which indicates that cleanup standards or cleanup technologies in some areas may be considered for revision. Such technical reports shall not be required unless the Executive Officer or the Board determines that such new information indicates a reasonable possibility that the Order may need to be changed under the criteria described in Finding 27.

f. **INSTITUTIONAL CONSTRAINTS**

1) COMPLETION DATE: June 28, 1991

TASK 6: PROPOSED CONSTRAINTS. Submit a technical report acceptable to the Executive Officer documenting procedures to be implemented by the dischargers, including a deed restriction prohibiting the use of the upper aquifer groundwater as a source of drinking water. Constraints shall remain in effect until groundwater cleanup standards have been achieved and pollutant levels have stabilized in onsite aquifers.

2) COMPLETION DATE: 60 days after Board staff approval of Task 6.

TASK 7: CONSTRAINTS IMPLEMENTED. Submit a technical report acceptable to the Executive Officer documenting that the proposed and approved constraints have been implemented.

g. **COMPLETION DATE: August 15, 1991**

TASK 8: UPGRADIENT WELL(S): Submit a technical report acceptable to the Executive Officer proposing additional monitoring well(s) upgradient of Well 34W to monitor for possible upgradient sources.

h. **COMPLETION DATE: November 15, 1991**

TASK 9: UPGRADIENT WELL(S) INSTALLATION: Submit a technical report acceptable to the Executive Officer documenting the installation of the well(s) proposed in Task 8.

i. **CURTAILING GROUNDWATER EXTRACTION**

1) COMPLETION DATE: 90 days prior to proposed curtailment groundwater extraction well or treatment system

TASK 10: ONSITE WELL PUMPING CURTAILMENT CRITERIA AND PROPOSAL. Submit a technical report acceptable to the Executive Officer containing a proposal for curtailing pumping from any groundwater and the criteria used to justify such curtailment. This report shall include data to show that groundwater cleanup standards for all VOCs have been achieved and pollutant levels have stabilized or are stabilizing, and that the potential

for pollutant levels rising above cleanup standards is minimal. In addition, the discharger may request curtailment of pumping based on a demonstration that all chemicals originating from its site have been cleaned up to the levels required by this Order and that any remaining chemicals are from other sources.

If the discharger claims that it is not feasible to achieve cleanup standards, the report shall evaluate the alternate standards that can be achieved, whether conditions for waiving an ARAR are met, and that the alternative cleanup standards proposed will be protective of human health and the environment.

2) COMPLETION DATE: 60 days after Board approves curtailment.

TASK 11: IMPLEMENTATION OF CURTAILMENT. Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks identified in the technical report submitted for Task 10.

3. The submittal of technical reports evaluating interim and final remedial measures will include a projection of the cost, effectiveness, benefits, and impact on public health, welfare, and environment of each alternative measure. The remedial investigation and feasibility study shall be consistent with the guidance provided by Subpart F of the NCP (40 CFR Part 300); Section 25356.1 (c) of the California Health and Safety Code; CERCLA guidance documents; and the State Water Resources Control Board's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California."

4. If the discharger is delayed, interrupted or prevented from meeting one or more of the completion dates specified in this Order, the discharger shall promptly notify the Executive Officer and the Board may consider revision to this Order.

5. Technical status reports on compliance with the Prohibitions, Specifications, and Provisions of this Order shall be submitted quarterly to the Board commencing on June 15, 1991, and covering the previous three months. On a quarterly basis thereafter, or as required by the Executive Officer, these reports shall consist of a report that: (1) summarizes work completed since submittal of the previous report and work projected to be completed by the time of the next report, (2) identifies any obstacles which may threaten compliance with the schedule of this Order and what actions are being taken to overcome these obstacles, and (3) includes, in the event of non-compliance with any Provision or Specification of this Order, written notification which clarifies the reasons for noncompliance and which proposes specific measures and a schedule to achieve compliance. This written notification shall identify work not completed that was projected for completion, and shall identify the impact of noncompliance on achieving compliance with the remaining requirements of this Order.

   These reports shall also identify any problems with or changes in the groundwater extraction system. Additionally, the quarterly reports shall include, but need not be limited to, updated water table and piezometric surface maps and plume maps for all affected water bearing zones, and appropriately scaled and detailed base maps showing the location of all monitoring wells and extraction wells, and identifying adjacent facilities and structures.

6. On an annual basis beginning with the report due January 15, 1992, or as required by the Executive Officer, the status report shall include, but need not be limited to, an evaluation of the progress of cleanup measures. A summary of monitoring and sampling data shall also be included in the annual report which can be part of the fourth quarter report.

7. The discharger shall submit technical reports acceptable to the Executive Officer containing revised Quality Assurance Project Plans, Site Safety Plans, and Site Sampling Plans. Each revised report shall be submitted within 30 days from the date of staff comments on the draft report.

8. All hydrogeological plans, specification, reports, and documents shall be signed by or stamped with the seal of a registered geologist, engineering geologist, or professional engineer.

9. All samples shall be analyzed by laboratories certified to perform analysis on Hazardous Materials or laboratories using approved EPA methods or an equivalent method acceptable to the Executive Officer. All laboratories shall follow EPA guidance "Documentation Requirements for Data Validation of Non-CLP Laboratory Data for Organic and Inorganic Analyses" dated May 1988 for preparation of data validation packages when required by the Executive Officer.

10. The discharger shall maintain in good working order, and operate, as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.

11. Copies of all reports pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order, shall be provided to the following agencies:

    a. Santa Clara Valley Water District
    b. Santa Clara County Health Department
    c. City of Mountain View
    d. State Department of Health Services/TSCD
    e. U.S. Environmental Protection Agency, Region IX (H-6-3)

    The Executive Officer may additionally require copies of correspondence, reports and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order to a local repository for public use. Additional copies of correspondence, reports, and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order shall be provided for public use when requested by the Executive Officer.

12. The discharger shall permit the Board or its authorized representative, in accordance with Section 13267(c) of the California Water Code:

    a. Entry upon premises in which any pollution sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order.

    b. Access to copy any records required to be kept under the terms and conditions of this Order.

    c. Inspection of any monitoring equipment or methodology implemented in response to this Order.

    d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharger.

13. The discharger shall file a report on any changes in site occupancy and ownership associated with the facility described in this Order.

14. If any hazardous substance, as defined pursuant to Section 25140 of the Health and Safety Code, is discharged in or on any waters of the state, or discharged and deposited where it is, or probably will be discharged on any waters of the state, the discharger shall report such discharge to this Regional Board, at (415) 464-1255 on weekdays during office hours from 8 a.m. to 5 p.m., and to the Office of Emergency Service at (800) 852-7550 during non-business hours. A written report shall be filed with the Regional Board within five (5) working days and shall contain information relative to: the nature of waste or pollutant quantity involved, duration of incident, cause of spill, Spill Prevention, Control, and Countermeasure (SPCC) Plan in effect, if any estimated size of affected area, nature of effect, corrective measures that have been taken or planned, and a schedule of these activities, and persons/agencies notified.

15. The Board will review this Order periodically and may revise the requirements when necessary.

16. Board Order Nos. 89-63 and 90-149 are hereby rescinded.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on May 15, 1991.

for
STEVEN R. RITCHIE
EXECUTIVE OFFICER

Attachment: Table 1
Self-Monitoring Program
Site Maps

TABLE 1
Cleanup Standards for the Chemicals of Concern In Groundwater

CTS PRINTEX
Moutain View, California

Compound	FEDERAL MCLG[a]	FEDERAL MCL[b]	CALIFORNIA MCL
Benzene (c)	0	5	1
Chloroform (d)	NA	100	NA
1,1 Dichloroethane (d)	NA	5	NA
cis-1,2-Dichloroethene	(70)	(70)	6
trans-1,2-Dichloroethene	(100)	(100)	10
1,1 Dichloroethene (e)	7	7	6
1,1,1-Trichloroethane	200	200	200
Trichloroethene [d]	0	5	5

(a) MCLG = maximum contaminant level goal. Concentrations in micrograms per liter.
(b) MCL = maximum contaminant level. Concentrations in micrograms per liter.
(c) Human Carcinogen
(d) Potential or probable human carcinogen.
(e) Possible human carcinogen.
NA = Not available.
( ) Criteria in parentheses are proposed standards
Shaded numbers are Final Cleanup Standards

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

CTS PRINTEX CORPORATION
Mountain View
GROUNDWATER SELF-MONITORING PROGRAM

A. GENERAL

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13268, 13383 and 13387(b) of the California Water Code and this Regional Board's Resolution No. 73-16.

The principal purposes of a monitoring program by a waste discharger, also referred to as self-monitoring program, are: (1) to document compliance with waste discharge requirements and prohibitions established by this Regional Board, (2) to facilitate self-policing by the waste discharger in the prevention and abatement of pollution arising from waste discharge, (3) to develop or assist in the development of effluent or other limitations, discharge prohibitions, national standards of performance, pretreatment and toxicity standards, and other standards, and (4) to prepare water and waste water quality inventories.

B. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analyses shall be performed according to the EPA Method 8000 series in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," dated November 1986; or other methods approved and specified by the Executive Officer of this Regional Board.

C. REPORTS TO BE FILED WITH THE REGIONAL BOARD

1. Violations of Requirements

In the event the discharger is unable to comply with the conditions of the site cleanup requirements and prohibitions due to:

a. Maintenance work, power failures, or breakdown of waste treatment equipment, or

b. accidents caused by human error or negligence, or

c. other causes, such as acts of nature, or

d. poor operation or inadequate system design,

the discharger shall notify the Regional Board office by telephone as soon as he or his agents have knowledge of the incident and confirm this notification in writing within 5 working days of the telephone notification. The written report shall include time, date, and person notified of the incident. The report shall include pertinent information explaining reasons for the noncompliance and shall indicate what steps were taken to prevent the problem from recurring.

2. The discharger shall file a written technical report to be received at least 30 days prior to advertising for bid (or 60 days prior to construction) on any construction project which would cause or aggravate the discharge of waste in violation of requirements; said report shall describe the nature, cost, and scheduling of all action necessary to preclude such discharge.

3. Self-Monitoring Reports

Written reports shall be filed regularly for each calendar quarter (unless specified otherwise) and filed no later than the fifteenth day of the following quarter. The next quarterly report is due July 15, 1991. The reports shall be comprised of the following:

a. Letter of Transmittal:

A letter from the discharger transmitting self-monitoring reports should accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period and actions taken or planned for correcting any requirement violations. If the discharger has previously submitted a detailed time schedule for correcting requirement violations, a reference to this correspondence will be satisfactory. Monitoring reports and the letter transmitting reports shall be signed by a principal executive officer or a duly authorized representative of that person.

The letter shall contain the following statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true and correct.

b. Results of Analyses and Observations

(1) Results from each required analysis and observation shall be submitted in the quarterly self-monitoring regular reports. Results shall also be submitted for any additional

analyses performed by the dischargers at the specific request of the Board. Quarterly water level data shall also be submitted in the quarterly report.

(2) The quarterly reports shall include the groundwater extraction rates from each extraction well, water level data from the extraction wells, the results of any aquifer tests conducted during the quarter, and data collected to evaluate the effectiveness of the well cycling program.

(3) The quarterly reports shall include a discussion of unexpected operational changes which could affect performance of the extraction system, such as flow fluctuations, maintenance shutdown, etc.

(4) The quarterly report shall also identify the analytical procedures used for analyses either directly in the report or by reference to a standard plan accepted by the Executive Officer. Any special methods shall be identified and should have prior approval of the Board's Executive Officer.

(5) The discharger shall describe in the quarterly Self-Monitoring Report (SMR) the reasons for significant increases in a pollutant concentration at a well. The description shall include:

a) the source of the increase,

b) how the discharger determined or will investigate the source of the increase, and

c) what source removal measures have been completed or will be proposed.

(6) Original lab results shall be retained and shall be made available for inspection for six years after origination or until after all continuing or impending legal or administrative actions are resolved.

(7) A map or maps shall accompany the quarterly report, showing all sampling locations and plume contours to final cleanup levels.

(8) The discharger shall describe in the quarterly monitoring report the effectiveness of the actions taken to regain compliance if compliance is not achieved. The effectiveness evaluation shall include the basis of determining the effectiveness, water surface elevations and water quality data.

(9) The annual report shall be combined with the fourth quarter regular report and shall include cumulative data for the current year. The annual report for December shall also include minimum, maximum, median, and average water quality data for the year, a summary of water level data, and GC/MS results. The report shall contain both tabular and graphical summaries of historical monitoring data.

d. SMP Revisions:

Additional long term or temporary changes in the sample collection frequency and routine chemical analysis may become warranted as monitoring needs change. These changes shall be based on the following criteria and shall be proposed in a quarterly SMR. The changes shall be implemented no earlier than 45 days after the self-monitoring report is submitted for review unless approved in writing.

Criteria for SMP revision:

(1) Discontinued analysis for a routine chemical parameter for a specific well after a two-year period of below detection limit values for that parameter.

(2) Changes in sampling frequency for a specific well after a two-year period of below detection limit values for all chemical parameters from that well.

(3) Temporary increases in sampling frequency or changes in requested chemical parameters for a well or group of wells because of a change in data needs (e.g., evaluating groundwater extraction effectiveness or other remediation strategies).

(4) Add routine analysis for a chemical parameter if the parameter appears as an additional chromatographic peak in three consecutive samples from a particular well.

(5) Alter sampling frequency based on evaluation of collective data base.

D. DESCRIPTION OF SAMPLING STATIONS

All existing and future shallow, intermediate and deep aquifer monitoring and extraction wells as appropriate. See Table 1 and Figure 1 (attached) for monitoring and extraction wells installed at the adoption of this SMP.

E. SCHEDULE OF SAMPLING AND ANALYSES

1. The schedule of sampling and analysis shall be that given in Table 1 (attached).

2. In addition, if a previously undetected compound or peak is detected in a sample from a well, a second sample shall be taken within a week after the results from the first sample are available. All chromatographic peaks detected in two consecutive samples shall be identified and quantified in the quarterly report.

3. Groundwater elevations shall be obtained on a monthly basis from all extraction wells and on a quarterly basis from all monitoring wells.

4. Well depths shall be determined on an annual basis and compared to the depth of the well as constructed. If greater than ninety percent of screen is covered, the discharger shall clear the screen by the next sampling.

5. The groundwater elevation at the time of sampling shall be determined and submitted in the quarterly report with the sampling results.

I, Steven R. Ritchie, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Regional Board's Resolution No. 73-16 in order to obtain data and document compliance with site cleanup requirements established in Regional Board Order No. 91-081.

2. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger, and revisions will be ordered by the Executive Officer or Regional Board.

3. Was adopted by the Board on May 15, 1991.

5/23/91
DATE

for
Steven R. Ritchie
Executive Officer

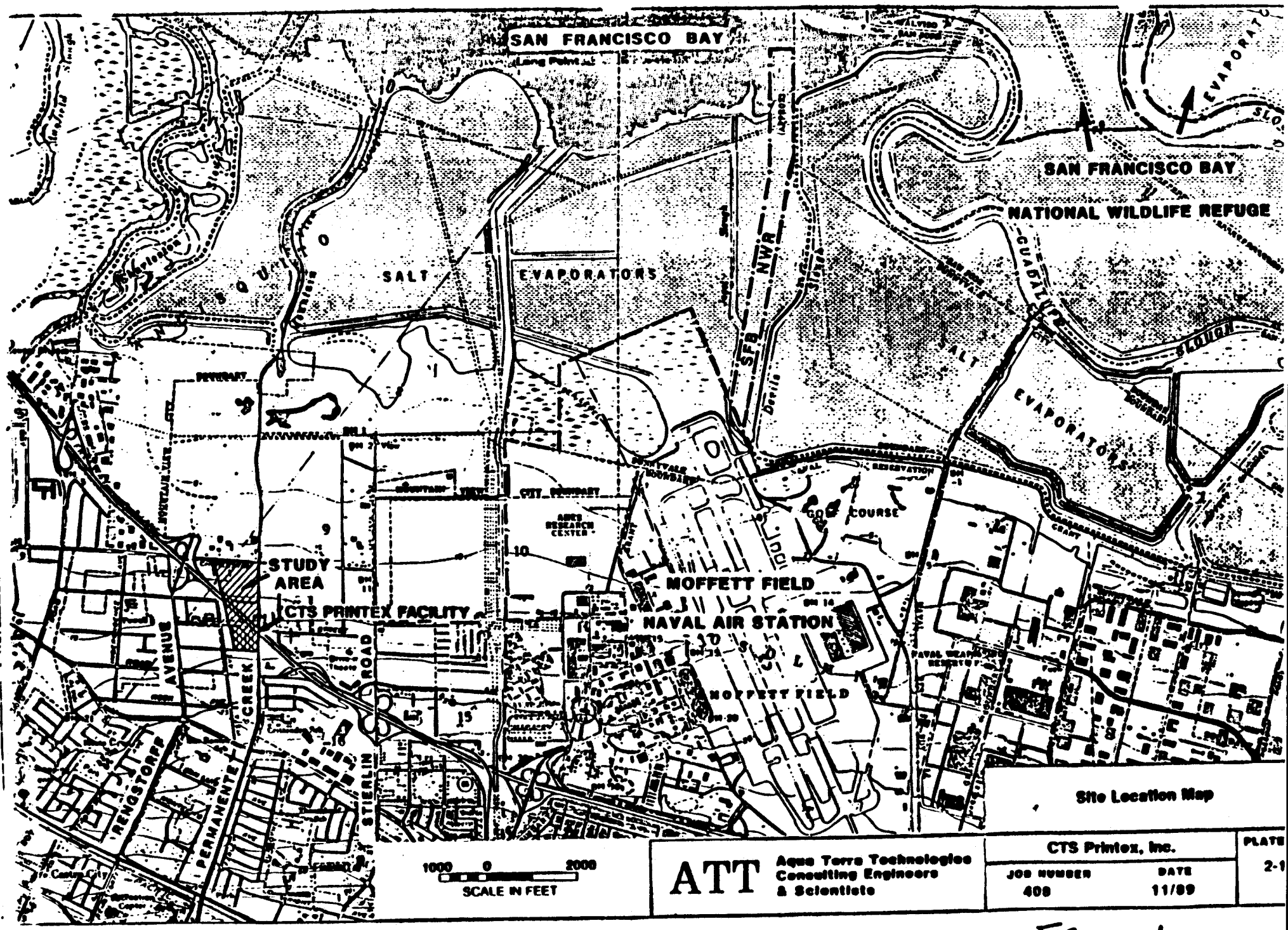
Attachments: Table 1 - Sampling Schedule
Figure 1 - Well Location Map

Table 1

Type of Analysis	Frequency	Sampling Station[1]
8010	Quarterly	5W,6W,21W-23W,25W-29W, 31W, 33W-38W, all extraction wells, and any additional wells.
8010	Semi-Anually	13W-17W,19W,20W,D1W,D2W
8010	Annually	7W-12W
8020	Annually	ES1W,ED1W,ES2W,ED2W 7W-12W,15W,16W
Metals[2]	Annually	ES1W,ED1W,ES2W,7W-12W

[1] Any new wells will be analyzed once, immediately following completion, for volatile organics (EPA Method 8240 as defined by Test Methods for Evaluating Solid Waste, SW-846, USEPA)

[2] Copper, lead, and nickel.

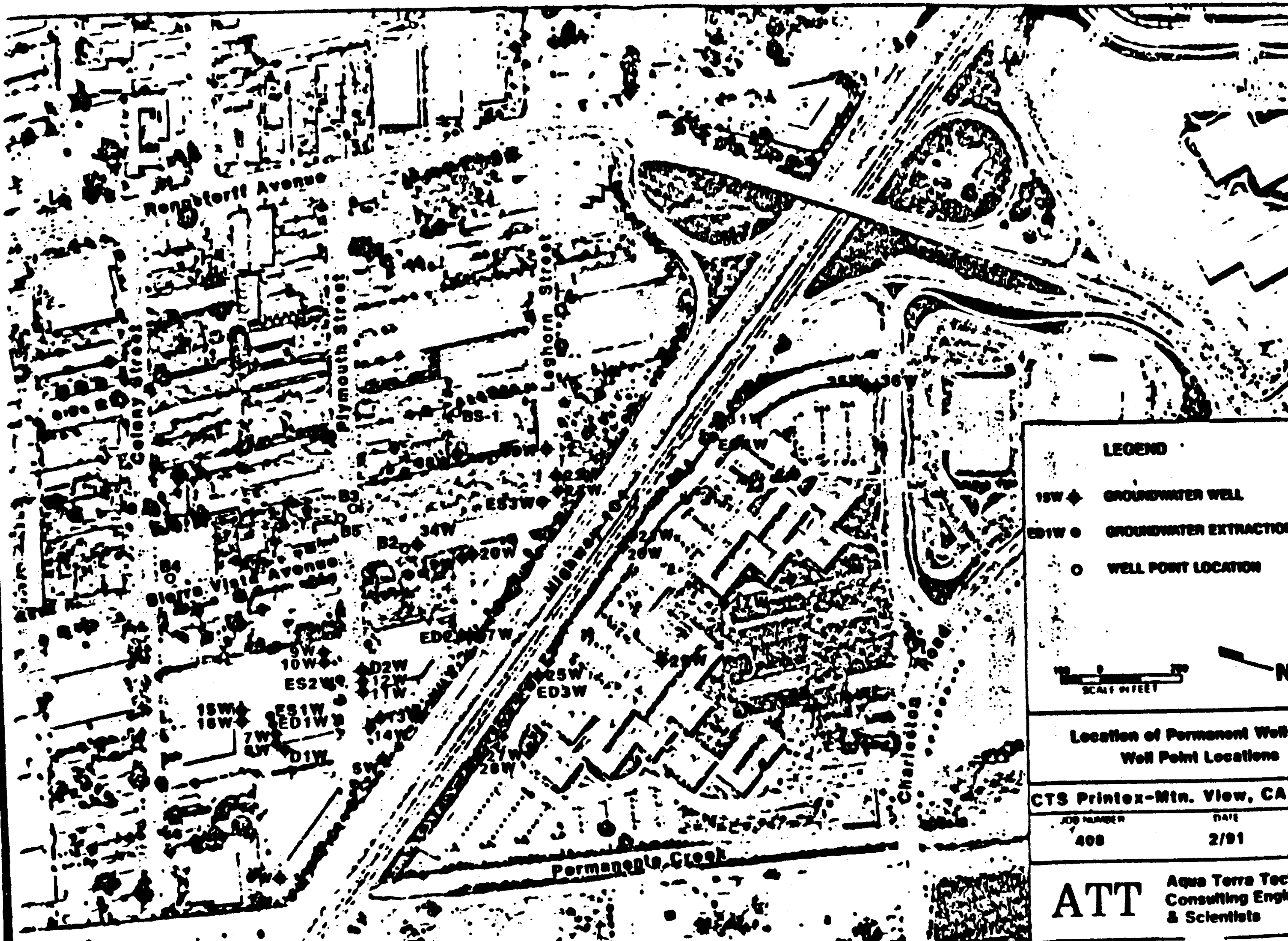


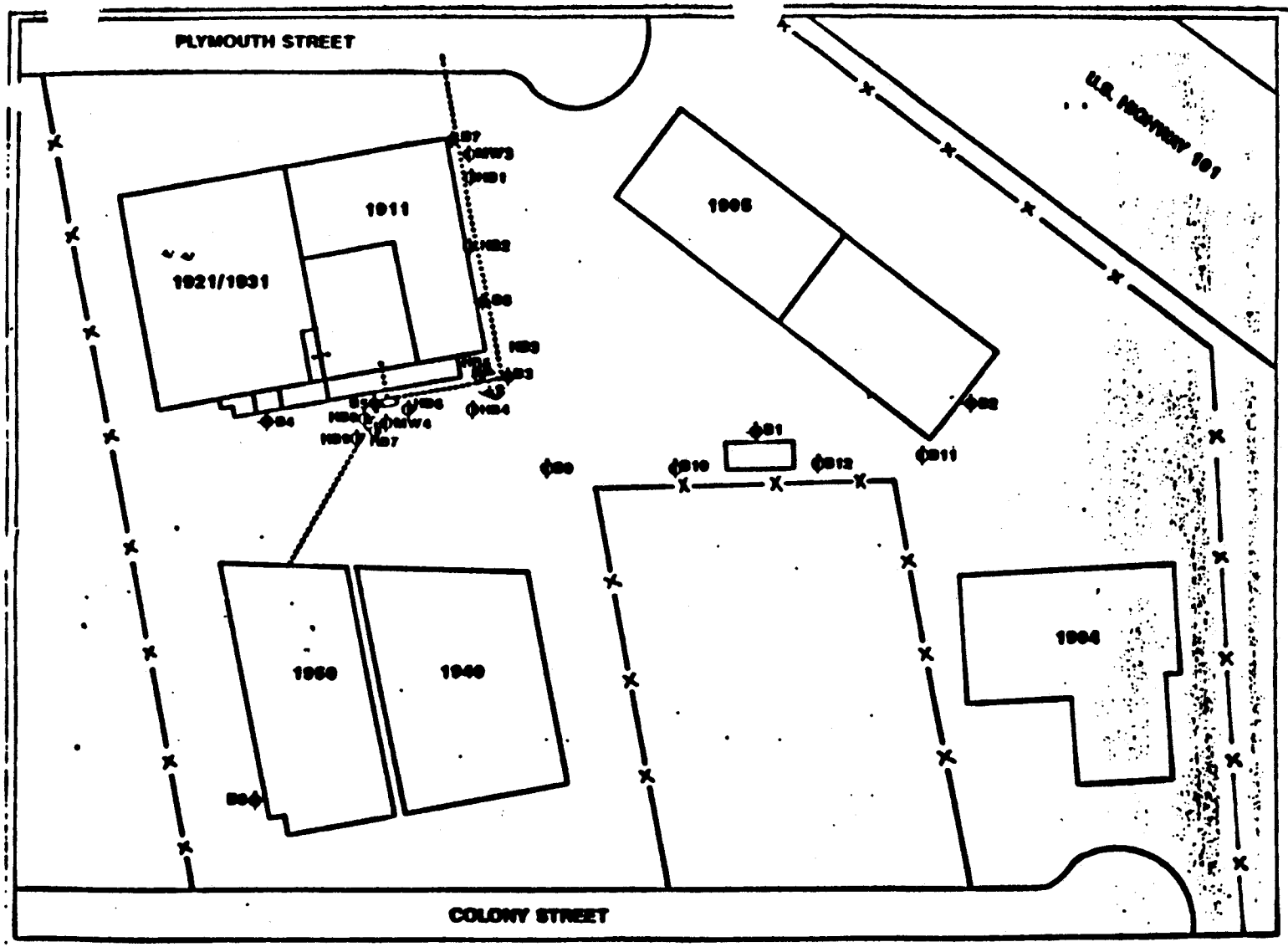
Site Location Map

ATT Aqua Terra Technologies Consulting Engineers & Scientists

CTS Printex, Inc.		PLATE
JOB NUMBER	DATE	2-1
408	11/89	

FIGURE 1


Rengstorff Avenue
Colony Street
Plymouth Street
Leghorn Street
Sierra Vista Avenue
Highway 101
Charleston Road
Permanente Creek
BS-1
B3
B5
B2
B4
34W
ES3W
20W
ED2
9W
10W
ES2W
D2W
12W
11W
15W
16W
ES1W
ED1W
7W
8W
D1W
5W
14W
25W
ED3W
28W
LEGEND
15W GROUNDWATER WELL
ED1W GROUNDWATER EXTRACTION
WELL POINT LOCATION
SCALE IN FEET
N
Location of Permanent Wells
Well Point Locations
CTS Printex-Mtn. View, CA
JOB NUMBER
408
DATE
2/91
ATT
Aqua Terra Tech
Consulting Engin
& Scientists



Exterior Source Sampling Location

FIGURE 3